CLAIMS

What is claimed is:

1. A compressed data structure, comprising:

a plurality of code strings; and

a plurality of look-up strings each containing an index identifying a particular code string to be retrieved and an instruction identifying an operation to be performed on the retrieved code string.

2. The data structure of Claim 1, wherein at least some of the code strings are positioned in a library and the index of at least one look-up string identifies a position in the library from which a particular code string is to be retrieved.

3. The data structure of Claim 2, wherein the library comprises a segmented library, each segment of the library containing at least one code string.

4. The data structure of Claim 1, wherein at least some of the code strings are positioned in a history cache and the index of at least one look-up string identifies a position in the history cache from which a particular code string is to be retrieved.

5. The data structure of Claim 1, wherein the instruction in a look-up string comprises an instruction to retrieve the code string identified by the index in the look-up string and to write that code string to an output memory.

6. The data structure of Claim 1, wherein the instruction in a look-up string comprises an instruction to retrieve the code string identified by the index in the look-up string, alter that code string, and write the altered code string to an output memory.

7. A data processing system, comprising:

a plurality of code strings;

a plurality of look-up strings each containing an index identifying a particular code string and an instruction identifying an operation to be performed on the identified code string; and

a decompression engine operable, for at least one look-up string, to retrieve a code string identified by the index in the look-up string and to perform an operation on or using the retrieved code string according to the instruction in the look-up string.

8. The system of Claim 7, wherein at least some of the code strings are positioned in a library and the index of at least one look-up string identifies a position in the library from which a particular code string is to be retrieved.

9. The system of Claim 8, wherein the library comprises a segmented library, each segment of the library containing at least one code string and the instruction in a look-up references the library segment containing the code string identified by the instruction in the look-up string.

10. The system of Claim 8, further comprising an output memory and wherein the decompression engine is operable to at least perform the functions of:

writing the retrieved code string to the output memory; and

altering the retrieved code string according to the instruction in the look-up string and writing the altered code string to the output memory.

11. The system of Claim 9, further comprising a history cache and wherein the decompression engine is further operable to:

write to a position in the history cache a code string recently written to the output memory; and

to retrieve a code string from a position in the history cache identified by the index in a look-up string, the instruction to retrieve from the history cache being provided by the instruction in the look-up string.

12. The system of Claim 11, wherein the decompression engine is further operable to repeatedly write the code string retrieved from the history cache a selected number of times, the selected number being identified by the look–up string.

13. The system of Claim 11, wherein the decompression engine is further operable to alter the code string retrieved from the history cache and write the altered code string to the output memory, the code string being altered according to the instruction of the look-up string.

14. The system of Claim 7, wherein the code string each comprise thirty-two bits.

15. The system of Claim 14, wherein at least some of the look-up string includes no more than eight bits.

16. A computing system, comprising:

a first memory location;

a plurality of code strings stored in the first memory location;

a plurality of look-up strings stored in the first memory location, each look-up string containing an index identifying a particular code string to be retrieved and an instruction identifying an operation to be performed on the retrieved code string;

a second memory location;

a decompression program operating from the second memory location, the decompression program comprising machine readable instructions that when executed causes a processor, for at least one look-up string, to retrieve the code string contained in the indexed position identified by the index of the look-up string and to perform an operation on or using the retrieved code string according to the instruction of the look-up string; and

a processor in operative communication with the first and second memory locations, the processor operative to execute the decompression program.

17. The system of Claim 16, wherein at least some of the code strings are positioned in a library and the index of at least one look-up string identifies a position in the library from which a particular code string is to be retrieved.

18. The system of Claim 17, further comprising a processor cache directly accessible by the processor and wherein the processor is further operable to load into and access from the processor cache at least portions of the library and decompression program.

19. The system of Claim 17, wherein the library comprises a segmented library, each segment of the library containing at least one code string and the instruction in a look-up string references the library segment containing the code string identified by the index in the look-up string.

20. The system of Claim 17, further comprising an output memory location and wherein the decompression program contains further machine readable instructions for:

writing a retrieved code string to the output memory; and

altering a retrieved code string according to the instruction in the look-up string and writing the altered code string to the output memory.

21. The system of Claim 18, further comprising a history cache accessible by the processor, and wherein the decompression program comprises further machine readable instructions for:

writing to a position in the history cache a code string recently written to the output memory; and

retrieving a code string from a position in the history cache identified by the index in the look-up string, the instruction to retrieve from the history cache being provided by the instruction in the look-up string.

22. The system of Claim 21, wherein the decompression program comprises further machine readable instructions to repeatedly write the code

string retrieved from the history cache a selected number of times, the selected number being identified by the look–up string.

23. The system of Claim 21, wherein the decompression program comprises further machine readable instructions for altering the code string retrieved from the history cache according to the instruction in the look-up string and writing the altered code string to the output memory.

24. The system of Claim 20, wherein the output memory location and the second memory location are the same.

25. The system of Claim 24, wherein the output and second memory locations comprise volatile memory.

26. The system of Claim 16, wherein the first memory location comprises non-volatile memory, and the second memory location comprises volatile memory.

27. A method for decompressing a data structure having a plurality of look-up strings and a plurality of code strings, the method comprising:

reading a look-up string;

retrieving a code string identified by the look-up string; and

performing on the retrieved code string an operation identified by the look-up string.

28. The method of Claim 27 wherein at least some of the code strings are positioned in a library and the act of retrieving comprises retrieving a code string from a position in the library identified by the look-up string.

29. The method of Claim 27, wherein the act of performing comprises writing the retrieved code string to an output memory.

30. The method of Claim 27, wherein the act of performing comprises altering the retrieved code-string by one bit and writing the altered code string to an output memory.

31. The method of Claim 27, wherein the act of performing comprises altering the retrieved code string by two or more bits and writing the altered code string to an output memory.

32. The method of Claim 27, wherein:

a look-up string includes an identifier and an arithmetic string, the identifier being used to identify a code string to be retrieved; and

the act of performing comprises altering the retrieved code string by performing a mathematical operation on the retrieved code string with the arithmetic string and writing the altered code string to an output memory.

33. The method of Claim 27, wherein:

a look-up string includes an identifier and a replacement, the identifier being used to identify a code string to be retrieved; and

the act of performing comprises altering the retrieved code string by replacing a selected number of bits in the retrieved code string with the replacement and writing the altered code string to an output memory.

34. The method of Claim 27, further comprising:

writing to a position in a history cache one or more code strings recently written to an output memory;

retrieving a code string from a position in the history cache, the position identified by a look-up string; and

performing on the code string retrieved from the history cache an operation identified by the look-up string.

35. The method of Claim 34, wherein the act of performing an operation on the code string retrieved from the history cache comprises writing that code string to the output memory.

36. The method of Claim 34, wherein the act of performing an operation on the code string retrieved from the history cache comprises writing that code string to the output memory a specified number of times, the number being specified by the look-up string.

37. The method of Claim 34, wherein the act of performing an operation on the code string retrieved from the history cache comprises altering the retrieved code string by one bit and writing the altered code string to an output memory.

38. The method of Claim 34, wherein the act of performing an operation on the code string retrieved from the history cache comprises altering the retrieved code string by two or more bits and writing the altered code string to an output memory.

39. The method of Claim 34, wherein:

a look-up string includes an identifier and an arithmetic string, the identifier being used to identify a code string to be retrieved; and

the act of performing an operation on the code string retrieved from the history cache comprises altering the retrieved code string by performing a mathematical operation on the retrieved code string with the arithmetic string and writing the altered code string to an output memory.

40. The method of Claim 34, wherein:

a look-up string includes an identifier and a replacement, the identifier being used to identify a code string to be retrieved; and

the act of performing an operation on the code string retrieved from the history cache comprises altering the retrieved code string by replacing a selected number of bits in the retrieved code string with the replacement and writing the altered code string to an output memory.

41. A computer program product for decompressing a data structure, the data structure containing a plurality of code strings and a plurality of look-up strings, the product comprising a machine useable medium having machine readable instructions thereon for:

reading the look-up strings;

for each look-up string read, retrieving a code string identified by the look-up string and performing on the retrieved code string an operation identified by that look-up string.

42. The product of Claim 41, wherein the instructions for performing comprise instructions for writing the retrieved code string to an output memory.

43. The product of Claim 41, wherein the instructions of performing comprise instructions for altering the retrieved code string by one bit and writing the altered code string to an output memory.

44. The product of Claim 41, wherein the instructions for performing comprise instructions for altering the retrieved code string by two or more bits and writing the altered code string to an output memory.

45. The product of Claim 41, wherein:

the index of the look-up string comprises an identifier and a arithmetic string, the identifier being used to identify a codes string to be retrieved; and

the instructions for performing comprises instruction for altering the retrieved code string by performing a mathematical operation on the retrieved code string with the arithmetic string and writing the altered code string to an output memory.

46. The product of Claim 41, wherein:

the index of the look-up string comprises an identifier and a replacement, the identifier being used to identify a codes string to be retrieved; and

the instructions for performing comprise instructions altering the retrieved code string by replacing a selected number of bits in the retrieved code string with the replacement and writing the altered code string to an output memory.

47. The product of Claim 41, further comprising instructions for:

writing to a history cache one or more code strings recently written to an output memory;

retrieving a code string from a position in the history cache, the position identified by the look-up string; and

performing on the code string retrieved from the history cache an operation identified by the look-up string.

48. The product of Claim 47, wherein the instructions for performing an operation on the code string retrieved from the history cache comprise instructions for writing that code string to the output memory.

49. The product of Claim 47, wherein the instructions for performing an operation on the code string retrieved from the history cache comprise instructions for writing that code string to the output memory a specified number of times, the number being specified by the look-up string.

50. The product method of Claim 47, wherein the instructions for performing an operation on the code string retrieved from the history cache comprise instructions for altering the retrieved code string by one bit and writing the altered code string to the output memory.

51. The product of Claim 47, wherein the instructions for performing an operation on the code string retrieved from the history cache comprise instructions for altering the retrieved code string by two or more bits and writing the altered code string to the output memory.

52. The product of Claim 47 wherein:

the index of the look-up string comprises an identifier and an arithmetic string, the identifier being used to identify the indexed position in the history cache; and

the instructions for performing an operation on the code string retrieved from the history cache comprise instructions for altering the retrieved code string by performing an mathematical operation on the retrieved code string with the arithmetic string, and writing the altered code string to the output memory.

53. The product of Claim 47 wherein:

the index of the look-up string comprises an identifier and a replacement, the identifier being used to identify the indexed position in the history cache; and

the instructions for performing an operation on the code string retrieved from the history cache comprise instructions for altering the retrieved code string by replacing a selected number of bits in the retrieved code string with the replacement and writing the altered code string to the output memory.